

## UNIT 5

# Magnetism and Electricity



Negative electrons moving from clouds to Earth caused this flash of lightning.

## What Is Electricity?

**Electricity** is an important part of our lives. Electric lights help us see at night. Television gives us entertainment and news. Washers, refrigerators, and telephones make our lives easier.

Electricity is caused by matter that has an electric charge. You know that matter is made of atoms. Atoms are made of protons, neutrons, and electrons. The protons and neutrons are in the nucleus. Protons have a positive electric charge. Neutrons have no charge. So the nucleus has a positive charge. Electrons move around the nucleus. They have a negative charge. Things with opposite electric charges attract each other. So the electrons are attracted to the nucleus.

As long as an atom has an equal number of protons and electrons, the atom has no charge. But an atom can lose electrons. When you comb your hair, electrons may leave your hair and go to the comb. Because your hair has lost electrons, it now has a positive electric charge. The comb has gained electrons and it now has a negative electric charge. Your hair and the comb attract each other because they have opposite electric charges. This is an example of **static electricity**.

During a thunderstorm, particles in clouds rub together. This separates electrons from their atoms. The electrons build up in the clouds. If another cloud or something on Earth has a positive charge, the electrons move. The giant spark that results is called lightning.

**A. Answer True or False.**

1. Protons have a positive electric charge. \_\_\_\_\_
2. Atoms are not made of any smaller particles. \_\_\_\_\_
3. The electrons are in the nucleus. \_\_\_\_\_
4. Things with opposite electric charges attract each other. \_\_\_\_\_
5. An atom cannot lose electrons. \_\_\_\_\_
6. When you comb your hair, you may cause static electricity.  
\_\_\_\_\_

**B. Use the words below to complete the sentences.**

atoms  
Electricity

matter  
opposite

particles  
same

1. \_\_\_\_\_ is an important part of our lives.
2. Electricity is caused by \_\_\_\_\_ that has an electric charge.
3. Matter is made of \_\_\_\_\_.
4. Things that have \_\_\_\_\_ charges attract each other.
5. As long as an atom has the \_\_\_\_\_ number of protons and electrons, it has no charge.

**C. Draw lines to match each particle with its description.**

- |             |                                |
|-------------|--------------------------------|
| 1. proton   | no electric charge             |
| 2. neutron  | attracted to a positive charge |
| 3. electron | attracted to a negative charge |

**D. Name four things that use electricity.** \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_